DECLARATION OF TADASHI HORIE

I, the undersigned, Tadashi Horie, hereby declare that:

1. I am fluent in both English and Japanese.

2. The English translation attached to this declaration is an accurate and correct translation of Japanese Patent Application No. 11-134895, filed on May 14, 1999 in Japan.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on September 25, 2003

Tadashi Horie
Registration No. 40,437
Attorney for Applicants

【Title of Document】 Specification

【Title of Invention】 Mobile Communication Terminal

【What is claimed is】

　　　　【Claim 1】　A mobile communication terminal served by a mobile communication network, comprising:

　　　　　　a communication means for accessing a server network-connected through said mobile communication network through a radio channel, and downloading site screen data provided by said server;

　　　　　　a display means for displaying the downloaded site screen data;

　　　　　　a recording means for recording said site screen data in a non-volatile memory; and

　　　　　　a display control means for reading from said non-volatile memory said site screen data recorded by said recording means and displaying it on said display means.

　　　　【Claim 2】　A mobile communication terminal in accordance with Claim 1, wherein said site screen data includes image data.

　　　　【Claim 3】　A mobile communication terminal in accordance with Claim 1, wherein said display control means displays said site screen data on said display means as a reception standby screen when said mobile communication terminal is in a reception standby state.

　　　　【Claim 4】　A mobile communication terminal in accordance with Claim 1, wherein said display control means displays said site screen data on said display means as a downloading screen when said mobile communication terminal downloads data from a server network-connected to said mobile communication network.

　　　　【Claim 5】　A mobile communication terminal in accordance with Claim 1, wherein said display control means displays said site screen data so as to fit the size of a display region of said display means.

　　　　【Claim 6】　A mobile communication terminal in accordance with Claim 1, wherein said display control means generates a repeating pattern of said site

screen data to display on said display means.

【Claim 7】 A mobile communication terminal in accordance with Claim 1, further comprising a recordability determining means for determining whether or not said site screen data may be recorded by said recording means.

【Claim 8】 A mobile communication terminal in accordance with Claim 7, wherein said recordability determining means performs the determination by referring to copyright information appended to said site screen data.

【Claim 9】 A mobile communication terminal in accordance with Claim 7, wherein said recordability determining means performs said determination by referring to data size information appended to said site screen data.

【Claim 10】 A mobile communication terminal served by a mobile communication network, comprising:

a communication means for receiving through a radio channel image data sent from a second terminal device network-connected through said mobile communication network;

a recording means for recording said received image data in a non-volatile memory;

a display means for displaying a reception standby screen; and

a display control means for reading from said non-volatile memory said image data recorded by said recording means, and displaying it on said display means as a reception standby screen.

【Claim 11】 A mobile communication terminal served by a mobile communication network, comprising:

a communication means for receiving through a radio channel image data sent from a second terminal device network-connected through said mobile communication network;

a recording means for recording said received image data in a non-volatile memory;

a display means for displaying a data downloading screen; and

a display control means for reading the image data recorded by said recording means from said non-volatile memory and displaying it on said

display means as a downloading screen.

【Claim 12】 A mobile communication terminal in accordance with either Claim 10 or 11, wherein said display control means displays said image data so as to fit the size of a display region of said display means.

【Claim 13】 A mobile communication terminal in accordance with either Claim 10 or 11, wherein said display control means generates a repeating pattern of said image data to display on said display means.

【Claim 14】 A mobile communication terminal in accordance with either Claim 10 or 11, further comprising a recordability determining means for determining whether or not said image data may be recorded by said recording means.

【Claim 15】 A mobile communication terminal in accordance with Claim 14, wherein said recordability determining means performs the determination by referring to copyright information appended to said image data.

【Claim 16】 A mobile communication terminal in accordance with Claim 14, wherein said recordability determining means performs the determination by referring to data size information appended to said image data.

【Claim 17】 A mobile communication terminal in accordance with Claim 1 through 16, wherein said mobile communication terminal is a portable telephone device.

【Detailed Description of the Invention】

【0001】

【Technical Field】

The present invention relates to a mobile communication terminal such as, for example, a portable telephone.

【0002】

【Background Art】

Mobile communication terminals, such as portable phones, have recently been improved with advanced functions. Regarding a display function,

for example, not a few mobile communication terminals display a designed reception standby screen on a liquid crystal display when in the state of waiting to receive a call (hereafter referred to as a reception standby state).

【0003】

【Problems to be Solved by the Invention】

In a conventional mobile terminal, this reception standby screen is displayed based on data stored in a memory inside the mobile communication terminal. However, the types of reception standby screens are restricted to those prestored in the memory, often limited to only one. Even when multiple image data types are available for selection, the number of selection is still limited to several due to the limited storage capacity of the memory.

Therefore, conventional mobile communication terminals have little freedom of choice in reception standby screen types, thus the user may lack interest in reception standby screens.

The present invention is made under the above-mentioned situation and has the purpose of offering a mobile communication terminal which enables its user to easily customize the images displayed at the display portion as reception standby screens or the like.

【0004】

【Means for Solving the Problems】

In order to achieve the aforementioned purpose, the present invention as claimed in Claim 1 is a mobile communication terminal served by a mobile communication network, comprising: a communication means for accessing a server network-connected through the mobile communication network through a radio channel, and for downloading site screen data provided by the server; a display means for displaying the downloaded site screen data;

a recording means for recording the site screen data in a non-volatile memory; and a display control means for reading from the non-volatile memory the site screen data recorded by the recording means and displaying it on the display means.

【0005】

The invention of Claim 2 is characterized wherein the mobile communication terminal as claimed in Claim 1, the site screen data includes image data.

【0006】

The invention of Claim 3 is characterized wherein the mobile communication terminal as claimed in Claim 1, the display control means displays the site screen data on the display means as a reception standby screen when the mobile communication terminal is in a reception standby state.

【0007】

The invention of Claim 4 is characterized wherein the mobile communication terminal as claimed in Claim 1, the display control means displays the site screen data on the display means as a downloading screen when the mobile communication terminal is downloading data from a server network through the mobile communication network.

【0008】

The invention of Claim 5 is characterized wherein the mobile communication terminal as claimed in Claim 1, the display control means displays the site screen data so as to fit the size of a display region of the display means.

【0009】

The invention of Claim 6 is characterized wherein the mobile communication terminal as claimed in Claim 1, the display control means generates a repeating pattern of the site screen data to display on the display means.

【0010】

The invention of Claim 7 is characterized wherein the mobile communication terminal as claimed in Claim 1 comprises a recordability determining means for determining whether or not the site screen data may be recorded by the recording means.

【0011】

The invention of Claim 8 is characterized wherein the mobile

communication terminal as claimed in Claim 7, the recordability determining means performs the determination by referring to copyright information appended to the site screen data.

【0012】

The invention of Claim 9 is characterized wherein the mobile communication terminal as claimed in Claim 7, the recordability determining means performs the determination by referring to data size information appended to the site screen data.

【0013】

The invention of Claim 10 is a mobile communication terminal served by the mobile communication network, and characterized by comprising: a communication means for receiving through a radio channel image data sent from a second terminal device connected through the mobile communication network; a recording means for recording the received image data in a non-volatile memory; a display means for displaying a reception standby screen; and a display control means for reading from the non-volatile memory the image data recorded by the recording means, and displaying it on the display means as a reception standby screen.

【0014】

The invention of Claim 11 is a mobile communication terminal served by the mobile communication network, and characterized by comprising: a communication means for receiving through a radio channel image data sent from a second terminal device connected through the mobile communication network; a recording means for recording the received image data in a non-volatile memory; a display means for displaying a data downloading screen; and a display control means for reading the image data recorded by the recording means from the non-volatile memory and displaying it on the display means as a downloading screen.

【0015】

The invention of Claim 12 is characterized wherein the mobile communication terminal as claimed in either Claim 10 or 11, the display control

means displays the image data so as to fit the size of a display region of the display means.

【0016】

The invention of Claim 13 is characterized wherein the mobile communication terminal as claimed in either Claim 10 or 11, the display control means generates a repeating pattern of the image data to display on the display means.

【0017】

The invention of Claim 14 is characterized wherein the mobile communication terminal as claimed in either Claim 10 or 11 comprises a recordability determining means for determining whether or not the image data may be recorded by the recording means.

【0018】

The invention of Claim 15 is characterized wherein the mobile communication terminal as claimed in Claim 14, the recordability determining means performs the determination by referring to copyright information appended to the image data.

【0019】

The invention of Claim 16 is characterized wherein the mobile communication terminal as claimed in Claim 14, the recordability determining means performs the determination by referring to data size information appended to the image data.

【0020】

The invention of Claim 17 is characterized wherein the mobile communication terminal as claimed in Claims 1 through 16, the mobile communication terminal is a portable telephone device.

【0021】
【DETAILED DESCRIPTION OF THE INVENTION】
[1. Configuration]
[1-1. Configuration of the System]

Fig. 1 is a block diagram showing the overall structure of a mobile

communication system with a mobile station according to an embodiment of the present invention.

This mobile communication system comprises a mobile station 100, a mobile telephone network 20, a mobile packet communication network 30, the Internet 40 and IP servers 50A, 50B ... .

Hereinafter, the mobile packet communication network 30 and mobile telephone network 20 shall be referred to collectively as mobile communication networks.

【0022】

The mobile station 100 is capable of connecting to the mobile telephone network 20 and the mobile packet communication network 30.   The structure of the mobile station 100 shall be described later.

【0023】

The mobile telephone network 20 is a communication network for providing communication services to the mobile station 100.   The mobile station 100 is capable of receiving calling services through the mobile telephone network 20, or the network 20 and a fixed telephone network, which is not shown.

The mobile telephone network 20 comprises a plurality of base stations 31 installed at predetermined intervals inside the communication area, a switching station (not shown) for performing circuit switching services, a control station (not shown) for controlling the network, and a communication line (not shown) connecting the respective stations.

【0024】

The mobile packet communication network 30, aside from the above-mentioned base stations 31, switching station, control station and the like, also comprises a packet subscriber processing device 33, a gateway server 34, a subscriber database 35 and a communication line (not shown) connecting these.

【0025】

The packet subscriber processing device 33 is a computer system

within a packet subscriber switching station (not shown) serving a plurality of base stations 31. The packet subscriber processing device 33 receives switching requests from the mobile station 100 and relays packet switching within the mobile packet communication network 30.

【0026】

The gateway server 34 is a computer system within a mobile packet gateway switching station (not shown) interconnecting the mobile packet communication network 30 with another network, such as the Internet 40. The gateway server 34 converts between different communication protocols of a plurality of networks and intermediates data exchange between these networks, or provides a variety of services referring to the subscriber database 35.

Specifically, the gateway server 34 converts between the transmission protocols of the mobile packet communication network 30 and TCP/IP, which is the standard communication protocol of the Internet 40.

【0027】

The gateway server 34 also performs information distribution services, such as intermediating the transmission and reception of electronic mails and various types of data between the mobile station 100 and IP servers 50A, 50B, ...

In order to perform this service, the gateway server 34 comprises a memory for mailboxes that stores the sent electronic mails and the like. Inside the memory, the addresses for storing electronic mails, addressed to each subscriber, are defined for each subscriber.

【0028】

The subscriber database 35 stores registered information relating to the respective subscribers of the mobile packet communication network 30.

This registered information may, for example, include "telephone number" of the mobile station 100, and the subscriber's "name", "sex", "date of birth" and "mailbox address," located in the memory of the gateway server 34, where information such as e-mails for the subscriber is stored.

【0029】

The IP server 50A (or 50B, ...) is a server system operated by an IP (Information Provider). The IP server 50A (or 50B,...) transmits information to the network, in HTML (Hyper Text Markup Language) data, to be provided to users.

The IP server 50A (or 50B, ...) is connected to the gateway server 34 through the internet 50 (sic)(40) as shown in Fig. 1, or can be connected to the gateway server 34 through a dedicated line. Or, the IP server 50A (or 50B,...) may be provided inside the gateway server 34.

【0030】
Next, the structure of the gateway server 34 shall be described in detail.

Fig. 2 is a block diagram showing the structure of the gateway server 34.

The gateway server 34 comprises a control portion 341, a subscriber information managing portion 342, a data distribution managing portion 343, and a bus 344 connecting these.

【0031】
The control portion 341 controls various parts of the gateway server 34. The control portion 341 functions as an interface between networks, such as by converting protocols between the mobile packet communication network 30 and other networks, such as the Internet 40.

【0032】
The subscriber information managing portion 342 stores and manages registered information obtained by referencing the subscriber database 35.

【0033】
The data distribution managing portion 343 comprises a memory for accumulating electronic mails as described above. The data distribution managing portion 343 also intermediates the transmission and reception of electronic mails and data between users of a plurality of mobile stations 100, between users of the mobile station 100 and users of other networks, such as the Internet 40, or between the mobile station 100 and the IP servers 50A, 50B, ...

The data distribution managing portion 343 also stores menu screen data for displaying menu items for types of services provided to the users of the mobile station 100, and transmits data in response to a request from the mobile station 100.

【0034】

The menu screen data is data in HTML format, such that data for each menu item contains an URL (Uniform Resource Locator) of the IP server 50A (or 50B, ...) which performs the service identified by that menu item.

When a user requests a specific service using the mobile station 100, the mobile station 100 sends the gateway server 34 the URL contained in the menu item data corresponding to that specific service. And guided by the URL, the gateway server 34 accesses the IP server among 50A, 50B,..., which performs that specific service.

【0035】

[1-2. Structure of the Mobile Station 100]

Next, the structure of the mobile station 100 shall be described.

Fig. 3 is a block diagram showing the structure of the mobile station 100 according to an embodiment of the present invention.

【0036】

The mobile station 100 comprises a CPU 110 for executing programs to control the entire mobile station 100, a RAM 120 used as a work area or the like for the CPU 110, a ROM 130 in which predetermined control programs or the like are stored, an EEPROM 135 for storing various types of screen data or the like, a transmission-reception device 140 for performing radio communications with a base station of the mobile communication network, and a user interface 150 including a liquid crystal display for displaying data and a keypad for input operations, and bus 160 for interconnecting these devices.

【0037】

This mobile station 100 is capable of at least two types of mode settings including settings for a "calling mode" for making a call through the mobile telephone network 20, and a "packet communication mode" for performing

packet communications through the mobile packet communication network 30.

In the packet communication mode, the mobile station 100 may transmit and receives electronic mails, and downloads data from the IP servers 50A, 50B, ...

【0038】

The keypad of the user interface 150 comprises a key known as a "function button" (not shown).   When a user pushes the function button, the mobile station 100 enters the packet communication mode by sending request signals to the mobile packet communication network 30, and acquiring menu screen data by accessing the gateway server 34, and displaying this menu screen data on the liquid crystal display.

【0039】

The ROM 130 stores various control programs which are executed by the CPU 110, such as programs relating to the calling function of the mobile station 100.   These programs shall be described herein after.

【0040】

First, these control programs include document data viewing software, known as a browser.   By reading and executing the browser from the ROM 130, the CPU 110 accesses the IP servers 50A, 50B, ... to acquire data in the HTML format.

(The mobile station 100) transmits a data acquisition request designating a URL through the gateway server 34 to the IP server 50A (or 50B,...), and stores the HTML data sent from the IP server 50A (or 50B, ...) in the RAM 120, thus completing the process.   The CPU 110 interprets the acquired site screen data such as a home page in the HTML format, and displays it on the liquid crystal display.

These control programs include programs for executing various routines described later.

【0041】

Next, the structure of the EEPROM 135 shall be described, referring to Fig. 4.

Fig. 4 is a diagram showing a memory map indicating memory contents of the EEPROM 135.

In this drawing, in the EEPROM 135, prearranged default standby screen data is recorded as first screen data from the position of address "A00001" of the EEPROM 135.

Then, the initial readout address is set in the EEPROM 135 so that when the CPU 110 is to display the standby screen on the liquid crystal display, it refers to this address "A0001" to read out the first screen data.

【0042】

Furthermore, in the EEPROM 135, the site screen data downloaded from one of the IP servers 50A, 50B, ... is recorded from the position of the address "X0001" as second screen data. This procedure of recording site screen data is initiated by selecting the "Register Display Screen" menu, which will be explained later.

【0043】

When the second screen data is selected as a standby screen by a request from the user, the address "X0001" is reset as the readout address in the EEPROM 135 instead of the previously mentioned address "A0001" to read out the second screen data accordingly.

【0044】

Data size information, indicating the size of the site screen data and copyright 'flag' information indicating that the content is copyright-protected and may not be copied without permission, is appended to the site screen data.

By analyzing the data size information contained in the site screen data against the available capacity of the EEPROM 135, and detecting the presence or absence of the copyright flag, the CPU 110 determines whether or not to record the site screen in the EEPROM 135. That is, if the EEPROM 135 does not have an enough unused space to store data of the size indicated by the data size information, the CPU 110 determines that the site screen data is non-recordable. Also, if a copyright flag is detected, the CPU 110 determines that the site screen data is non-recordable.

【0045】

[2. Operation]

Hereinafter, the operations of the embodiment shall be explained with reference to Figs. 5-10.

Fig. 5 is a flow chart showing the main routine executed by the CPU 110, Fig. 6 is a flow chart showing a menu display routine executed by the CPU 110, Fig. 7 is a flow chart showing a site access routine executed by the CPU 110, Fig. 8 is a flow chart showing a display screen registering routine executed by the CPU 110 and Fig. 9 is a flow chart showing a standby screen setting routine executed by the CPU 110.

Fig. 10 presents transitional diagrams showing screen images displayed on the liquid crystal display of the mobile station 100 during execution of the above routines.

【0046】

[2-1. Operations after Power turned-on]

First, when the power supply of the mobile station 100 is turned on, the CPU 110 reads the control program from the ROM 130, and activates the main routine shown in Fig. 5.

【0047】

In step SP1, the CPU 110 reads first screen data from the address "A0001" of the EEPROM 135 and displays it on the liquid crystal display as a standby screen.   Fig. 10(A) is a diagram showing the standby screen displayed on the liquid crystal display at this time.

Then, in step SP2, the CPU 110 determines whether or not there has been an event, such as a user input or call arrival.

【0048】

If the result of the determination is NO (i.e., if there is no event), then the CPU 110 repeats the standby screen display procedure of step SP1.

If the result of the determination is YES (i.e., if there is an event), the procedure advances to step SP3 and the CPU 110 executes a procedure corresponding to that event.   The procedure corresponding to the event in step

SP3 may, for example, be a procedure to be executed in the calling mode triggered by an outgoing call or incoming call, or a procedure to be executed in the packet communication mode triggered by a pressing of the function button.

Then, when the procedure corresponding to the event in step SP3 is completed, the procedure returns to step SP1 and the CPU 110 once again displays a standby screen on the liquid crystal display.

【0049】

[2-2. Operations in Menu Display]

If the function button is pressed after the power supply is turned on, the CPU 110 activates the menu display routine shown in Fig. 6 at the aforementioned step SP3.

【0050】

In this routine, at step SP11, the mobile station 100 sends a packet communication request signal to the mobile packet communication network 30. As a result, the mobile station 100 enters the packet communication mode and the gateway server 34 sends menu screen data.

In step SP12, the CPU 110 interprets the received menu screen data, and displays it on the liquid crystal display.

【0051】

Fig. 10(B) is a diagram showing a menu screen displayed on the liquid crystal display at this time.

As shown in the Fig. 10(B), the menu items which are displayed include "① register display screen" for recording screen data displayed on the liquid crystal display in the EEPROM 135, "② mobile banking" for performing online transactions with a financial institution, "③ electronic mail" for performing electronic mail services, "④ Internet" for accessing a site (such as the IP servers 50A, 50B, ...) requested by the user by designating a URL, and "⑤ set standby screen" for displaying the site screen data downloaded from the site such as the IP servers 50A, 50B, ... as the standby screen.

【0052】

In step SP13, the CPU 110 determines whether or not the user has

selected a specific menu item from among the menu items displayed on the liquid crystal display.

Then, if the determination result is NO (i.e., if there is no menu selection), the CPU 110 repeats the procedure of the menu screen display of step SP12.

If the determination result is YES (i.e., if there is a menu selection), the procedure advances to step SP14, and the CPU 110 performs a procedure corresponding to the selected menu item.

Once the procedure corresponding to the menu item is completed in step SP14, this menu display routine ends and the procedure returns to the main routine.

【0053】
[2-3. Operations in Site Access]
In the aforementioned menu display state, if the user selects the menu item "④ Internet" and orders access to a desired site, the CPU 110 activates the site access routine shown in Fig. 7.

【0054】

In this routine, in step SP21, the mobile station 100 sends a URL designated by the user, to access the site corresponding that URL through the gateway server 34 in order to receive the site screen data.

In step SP22, the CPU 110 interprets the received site screen data and displays it on the liquid crystal display. Fig. 10(C) is a diagram of a site screen displayed on the liquid crystal display at this time.

【0055】

In step SP23, the CPU 110 determines whether or not there has been an input operation by the user responding to the displayed site screen.

If the result of the determination is NO (i.e., if there is no input), then the CPU 110 repeats the procedure of the site screen display of step SP22.

If the result of the determination is YES (i.e., if there is an input), then the procedure advances to step SP24, and the CPU executes a procedure corresponding to that event.

When the procedure corresponding to the event of step SP24 is

completed, the site access routine ends, and the procedure returns to the menu display routine.

【0056】

[2-4. Operations in Display Screen Registration]

In the site screen display state of step SP22 in Fig. 7, when the function button is pressed by a user, the site screen data is stored in a temporary waiting area of the RAM 120, and the screen displays the menu screen shown in Fig. 10(D).

Here, if the user selects "① register display screen", the CPU 110 executes the display screen registration routine shown in Fig. 8.

【0057】

In step SP31 in this routine, it is determined whether or not the temporary stored site screen data is recordable. As mentioned above, the procedure is performed by analyzing the data size information appended to the site screen data against the available space in the EEPROM 135 to make this determination. Furthermore, this process is executed by detecting the presence of or absence of copyright flag information in the site screen data.

【0058】

If the result of this determination is YES (i.e., if recordable), then the procedure advances to step SP32, where the CPU 110 transfers the site screen data in the temporary waiting area in the RAM 120 to the EEPROM 135 and records from the address "X0001". Fig. 10(E) is a diagram showing a screen displayed during the recording of the site screen data.

When this recording process is completed, the procedure advances to step SP33, and the CPU 110 displays a display screen registration completion notification on the liquid crystal display. Fig. 10(F) is a diagram showing the display screen registration completion notification displayed at this time.

If the result of the determination in step SP31 is NO (i.e., if non-recordable), then the procedure advances to step SP34, and the CPU 110 displays a non-recordability notification on the liquid crystal display. Fig. 10(G) is a diagram showing the non-recordability notification displayed at this time.

【0059】
[2-5. Operations in Standby Screen Setting]

After the display screen registration routine shown in Fig.8 is performed, and the "set standby screen" is selected on this menu screen, the standby screen setting routine is activated in step SP14 of Fig. 6.

【0060】

In step SP41 of this routine, the CPU 110 performs the standby screen setting procedure described below.

【0061】

First, the CPU 110 displays on the liquid crystal display a screen for the user to select a display format for the standby screen.

Fig. 10(I) is a diagram showing a screen displayed on the liquid crystal display at this time.

As shown in the drawing, the display format for the standby screen includes a "center" and a "tile".

The "center" refers to a way of displaying the site screen data recorded in the EEPROM 135 is scaled according to the screen size of the liquid crystal display and displayed at the center of the display. Additionally, the "tile" refers to another way of displaying the screen data in which a repeating pattern of the screen data recorded in the EEPROM 135 is displayed over the entire screen of the liquid crystal display. Fig. 11 presents diagrams showing specific display examples of a "center" display and a "tile" display.

【0062】

When the display format is set, the CPU 110 performs a procedure to reset the readout address of the standby screen data. That is, as described above, the readout address of the standby screen data is changed from the address "A0001" of the first screen, to the address "X0001" of the second screen data.

【0063】

When this procedure ends, the process advances to step SP42, where the CPU 110 displays a procedure completion notification on the liquid crystal

display.   Fig. 10(J) is a diagram showing a screen displayed on the liquid crystal display at this time.

【0064】

Thereafter, the processing of the CPU 110 returns to the main routine shown in Fig. 5.   Then, in step SP1 of that diagram, the newly set second screen data is read from the EEPROM 135 as a standby screen, and displayed on the liquid crystal display.   Fig. 10(K) is a diagram showing the standby screen displayed at this time.

【0065】

According to the embodiment described above, the mobile station 100 (110 (sic.)) receives and stores site screen data from a site chosen by the user, and displays the site screen data on the liquid crystal display as the standby screen.

【0066】

[Modifications]

In the aforementioned embodiment, the user records site screen data by selecting the menu item "①register display screen", and sets the recorded site screen data as a standby screen by selecting the menu item "⑤set standby screen".   But this invention is not restricted to such a guiding menus.

Various other embodiments can be conceived.   For instance, the site screen recording process and the standby screen setting process may be performed in response to entering of one or more predetermined key operations by the user while the site screen is displayed, which is not yet recorded in the EEPROM 135 but simply recorded temporarily in the RAM 120.   The aforementioned both processes may be performed at the same time by simply selecting the menu item "set standby screen".

【0067】

The "image data" in the present invention is not restricted only to still images but includes moving images and data which mixes moving images and still images.   For example, it is possible to include moving images in the form of ordering a plurality of still images in a temporal sequence such as an

animation.

【0068】

In the embodiment described above, the mobile station 100 displays the site screen data provided from a site (the IP servers 50A, 50B, ...) as standby screen data but the invention is not limited to such embodiments.

For example, image data to be used as a standby screen may be sent by electronic mail to the mobile station 100 from another terminal connected through the mobile communication network.

This 'another' terminal may be another mobile communication terminal served by another mobile communication network or may be a computer connected to the Internet 40.

In this case, the image data acquired through electronic mail is processed by the mobile station 100 in the display screen registration procedure and the standby screen setting procedure.

【0069】

In the aforementioned embodiment, an example has been described of displaying the stored site screen data in the EEPROM 135 of the mobile station 100 during the reception standby state. However, there is no restriction thereto. The mobile station 100 may display the site screen data while it is in other states.

For example, the screen data recorded in the EEPROM 135 can be displayed as a download processing screen in a state in which the mobile station 100 is downloading data from the IP server 50A (or 50B, ...).

Moreover, it is possible to enable the user to set a preferred state of the mobile station 100 in which the standby screen data is to be displayed.

【0070】

The mobile communication terminal of the present invention is not restricted to a mobile station 100 such as the aforementioned portable telephone device or PHS (Personal Handyphone System). It may be, for example, a mobile communication terminal which does not have a telephone function, such as a PDA (Personal Digital Assistant).

【0071】

【Effects of the Invention】

According to the present invention as described above, the users of the mobile communication terminal of this invention are able to easily customize the images displayed at the display portion as reception standby screen or the like.

【Brief Description of the Drawings】

【Fig. 1】 a block diagram showing the structure of a mobile communication system with a mobile station according to an embodiment of the present invention.

【Fig. 2】 a block diagram showing the structure of a gateway server 34 in the same embodiment.

【Fig. 3】 a block diagram showing the structure of a mobile station 100 in the same embodiment.

【Fig. 4】 a diagram showing a memory map containing the memory contents of the EEPROM 135 in the same embodiment.

【Fig. 5】 a flow chart of a main routine performed by the CPU 110 in the same embodiment.

【Fig. 6】 a flow chart of a menu display routine performed by the CPU 110 in the same embodiment.

【Fig. 7】 a flow chart of a site access routine performed by the CPU 110 in the same embodiment.

【Fig. 8】 a flow chart of a display screen registering routine performed by the CPU 110 in the same embodiment.

【Fig. 9】 a flow chart of a standby screen setting routine performed by the CPU 110 in the same embodiment.

【Fig. 10】 diagrams respectively showing screens displayed on a liquid crystal display during the performance of each routine in the same embodiment.

【Fig. 11】 diagrams respectively showing specific display examples of a center display and a tile display after setting the standby screen in the same embodiment.

【Explanation of Reference Numerals and Signs in the Drawings】

20 . . . . . Mobile Telephone Network (Mobile Communication Network)

30 . . . . . Mobile Packet Communication Network (Mobile Communication Network)

31 . . . . . Mobile Base Station

33 . . . . . Packet Subscriber Processing Device

34 . . . . . Gateway Server

35 . . . . . Subscriber Database

40 . . . . . Internet (Network)

50A, 50B . . . . . IP Server (Server)

100 . . . . .Mobile Station (Mobile Communication Terminal)

110 . . . . . CPU (Recording Means, Display Control Means, Recordability Determining Means)

120 . . . . . RAM

130 . . . . . ROM

135 . . . . . EEPROM (Non-volatile Memory)

140 . . . . . Transmission-Reception Device (Communication Means)

150 . . . . . User Interface (Display Means)

341 . . . . . Control Portion

342 . . . . . Subscriber Information Managing Portion

343 . . . . . Data Distribution Managing Portion

【Title of Document】 Abstract

【Abstract】

【Object】　　　The present invention enables users to easily to customize images displayed at the display portion of the mobile communication terminal as a reception standby screen or the like.

【Means for Solving the Problems】　　　A transmission-reception device 140 receives site screen data transmitted from various sites.　An EEPROM 135 stores the site screen data received by the transmission-reception device 140. When in a reception standby state, the CPU 110 reads the site screen data stored in the EEPROM 135, generates a site screen and displays the site screen data on the liquid crystal display.

【Elected View】 Fig. 3